

Mg-Zn Oxide Tunnel Barriers and Method of Formation

Abstract

5 ZnMg oxide tunnel barriers are grown which, when sandwiched between ferri- or
ferromagnetic layers, form magnetic tunnel junctions exhibiting high tunneling
magnetoresistance (TMR). The TMR may be increased by annealing the magnetic tunnel
junctions. The zinc-magnesium oxide tunnel barriers may be incorporated into a variety
of other devices, such as magnetic tunneling transistors and spin injector devices. The
10 ZnMg oxide tunnel barriers are grown by first depositing a zinc and/or magnesium layer
onto an underlying substrate in oxygen-poor (or oxygen-free) conditions, and
subsequently depositing zinc and/or magnesium onto this layer in the presence of reactive
oxygen.

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